VIRAL HEMORRHAGIC FEVERS

LASSA FEVER

Lassa fever is an acute viral illness that occurs in West Africa. The illness was discovered in 1969 when two missionary nurses died in Nigeria, West Africa. The cause of the illness was found to be Lassa virus, named after the town in Nigeria where the first cases originated. The virus, a member of the virus family Arenaviridae, is a single-stranded RNA virus and is zoonotic, or animal-borne.

Lassa fever is an endemic disease in portions of West Africa. It is recognized in Guinea, Liberia and Sierra Leone, as well as Nigeria. Because the rodent species which carry the virus are found in other regions outside of West Africa, however, the actual geographic range of the disease may extend to other portions of Africa. In areas of Africa where the disease is endemic (that is, constantly present), Lassa fever is a significant cause of illness and death. While the disease is mild or has no observable symptoms in about 80 percent of people infected with the virus, the remaining 20 percent have severe multisystem disease. Lassa fever also is associated with occasional epidemics, during which the case-fatality rate can reach 50 percent.

In West Africa, the number of Lassa virus infections each year is estimated at 100,000 to 300,000, with about 5,000 deaths. Unfortunately, such estimates are crude because surveillance for cases of the disease is not uniformly performed. In some areas of Sierra Leone and Liberia, it is known that 10 percent to 16 percent of people admitted to hospitals have Lassa fever, which indicates the serious impact of the disease on the population of this region.

The reservoir, or host, of Lassa virus is a rodent known as the multimammate rat of the genus Mastomys. It is not certain which species of Mastomys are associated with Lassa; however, at least two species carry the virus in Sierra Leone: M. huberti and M. erythroleucus. Mastomys rodents breed very frequently, produce large numbers of offspring and are numerous in the savannas and forests of West, Central and East Africa. In addition, some species like M. huberti prefer to live in human homes. All these factors together contribute to the relatively efficient spread of Lassa virus from infected rodents to humans.

The virus may be spread to humans in a number of ways. The Mastomys rodents shed the virus in urine and droppings; therefore, the virus can be transmitted through direct contact with these materials, through touching objects or eating food contaminated with these materials or through cuts or sores. Because Mastomys rodents often live in and around homes and scavenge on human food remains or poorly stored food, transmission of this sort is common. Contact with the virus also occurs when a person inhales tiny particles contaminated with rodent excretions. This is called aerosol or airborne transmission. Finally, because Mastomys rodents are sometimes used as a food source, infection may occur via direct contact when they are caught and prepared for food.

Lassa fever also may spread through person-to-person contact. This type of transmission occurs when a person comes into contact with virus in the blood, tissue, secretions or excretions of an infected individual. A person also may become infected by breathing-in small airborne particles that an infected person may produce through actions such as coughing. The virus cannot be spread through casual contact (including skin-to-skin contact without exchange of body fluids). Person-to-person transmission is common in both village settings and in health-care settings, where, along with the previously modes of transmission, the virus also may be spread by contaminated medical equipment, such as reused needles (this is called nosocomial transmission).

Symptoms of Lassa fever, which typically occur one to three weeks after the patient comes into contact with the virus, include fever, retrosternal pain (pain behind the chest wall), sore throat, back pain, cough, abdominal pain, vomiting, diarrhea, conjunctivitis, facial swelling, proteinuria (protein in the urine) and mucosal bleeding. Neurological symptoms also have been described, including hearing loss, tremors and encephalitis. Because the symptoms of Lassa fever are so varied and nonspecific, clinical diagnosis is often difficult.

The most common complication of Lassa fever is deafness. Various degrees of deafness occur in about one-third of cases, and hearing loss is permanent in many cases. As far as is known, severity of the disease does not affect this complication: deafness may develop in mild as well as in severe cases. Spontaneous abortion is another serious complication. About 15 percent to 20 percent of patients hospitalized for Lassa fever die from the illness. Overall, however, only about 1 percent of infections with the Lassa virus result in death. The death rates are particularly high for women in the third trimester of pregnancy and for fetuses, of which about 95 percent die in the uterus of infected pregnant mothers.

For more information, call the North Dakota Department of Health at 701.328.2378.